Maryland Nonpoint Source Program
2003 Annual Report

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Coastal Zone Management Division
Watershed Services Unit
Maryland Department Of Natural Resources
Annapolis, MD
May 2004

Robert L. Ehrlich, Jr.
Governor

Michael S. Steele
Lt. Governor

A message to Maryland's Citizens:

The Maryland Department Of Natural Resources (DNR) seeks to preserve, protect and enhance the living resources of the state. Working in partnership with the citizens of Maryland, this worthwhile goal will become a reality. This publication provides information that will increase your understanding of how DNR strives to reach that goal through its many diverse programs.

C. Ronald Franks
Secretary

W.P. Jensen
Deputy Secretary

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NPS Program Vision Statement

Maryland's vision is to implement dynamic and effective nonpoint source pollution control programs. These programs are designed to achieve and maintain beneficial uses of water; improve and protect habitat for living resources; and protect public health through a mixture of water quality and/or technology based programs; regulatory and/or non-regulatory programs; and financial, technical, and educational assistance programs.

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Copies of this report are also available on the Nonpoint Source Program Website at:

http://www.dnr.state.md.us/bay/czm/nps

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EPA United States Environmental Protection Agency

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MARYLAND NONPOINT SOURCE POLLUTION PROGRAM ANNUAL REPORT

Executive Summary

This report documents the activities and accomplishments of the State of Maryland in general and the Maryland Department of Natural Resources in particular regarding administration of the State's nonpoint source program. Maryland Department of Natural Resources (DNR) is the lead agency responsible for coordination of NPS Program policies, funds, and cooperative agreements with state agencies and local governments. Several other state agencies have key responsibilities, including the Departments of Environment (MDE), Agriculture (MDA), Planning (MDP), and State Highway Administration (SHA). The NPS Program is housed within DNR's Coastal Zone Management Division, a part of the Watershed Services Unit (WSU).

In the past year, the NPS Program has had notable program accomplishments and successes. Progress was made in implementing best management practices in all nonpoint source areas through the provision of technical assistance, project funding or both. For a list of recently funded projects, see http://www.dnr.state.md.us/bay/czm/nps/projects/projectsy.html.

Highlighted 2003 programmatic efforts include:

- *Watershed Restoration Action Strategies (WRAS):* The WRAS program has made significant progress in developing and implementing comprehensive watershed plans. The WRAS Program has fine-tuned its watershed planning process in response to local government recommendations.
- *Maryland Watershed Management Planning Strategy Development:* The Chesapeake Bay's Watershed Commitments Task Force (CWiC) has made progress in assisting signatory states in meeting the 2/3 watershed management planning commitment in the Chesapeake Bay 2000 Agreement.
- *Nonpoint Source Total Maximum Daily Loads Implementation:* The Nonpoint Source Program continues to work closely and cooperatively with the Department of the Environment on TMDL implementation.
- *Coastal Nonpoint Program (CNP) Implementation Work Groups:* Nonpoint Source Program staff have taken lead roles in several national Coastal Nonpoint Program Work Groups and Task Force efforts to strengthen and refine the CNP Program.
- *Agricultural Programs:* The implementation of agricultural programs [Nutrient Management, Maryland Agricultural Cost Share (MACS), Soil Conservation and Water Quality (SCWQ) Program, Conservation Reserve Enhancement Program (CREP)] continues to play a key role in reducing nonpoint source pollution.
- *Nonpoint Source Program Work Group Participation:* New national nonpoint source program measures have been developed. The Environmental Protection Agency (EPA) will refine these measures in 2004 and expects states to achieve them over the next five to ten years.
- *Progress in Related Programs:* Clean Marinas, Tributary Strategies, Maryland Biological Stream Survey, and Stream Waders Program.

2004 Anticipated Programmatic Efforts

The Nonpoint Source Program works to ensure that Maryland continues to fulfill the program requirements of both the §319 Nonpoint Source Program (Clean Water Act) and the 6217 Coastal Nonpoint Program (Coastal Zone Act Reauthorization Amendments). During the upcoming year, major programmatic efforts will include:

- *Nonpoint Source Management Plan Revision*. The Nonpoint Source Program in cooperation with state and local agencies, and with input from tributary teams and citizens, will revise the 1999 Nonpoint Source Management Plan. The revised management plan will include a five and fifteen year strategy to reduce nonpoint source pollution and to attain beneficial uses for Maryland waterways. The revised plan will also include a comprehensive description of statewide efforts to control, prevent and reduce nonpoint source pollution. This effort will likely continue into 2005.

- *National Nonpoint Source Monitoring Conference:* The Department of Natural Resources in cooperation with the Environmental Protection Agency, Delaware Inland Bays Program, Maryland Coastal Bays Program, Wicomico Soil Conservation District, Worcester Soil Conservation District, Maryland Department of Agriculture, University of Maryland System, and the Sussex County Delaware Soil Conservation District will host the 12th national nonpoint source monitoring conference. The conference will be held on September 27 – 30, 2004 in Ocean City. The conference will focus on the management of nutrient inputs and exports in the rural landscape. Presentation sessions will focus on BMP effectiveness evaluations, runoff and water table management, nutrient input management and septic systems management and effects.

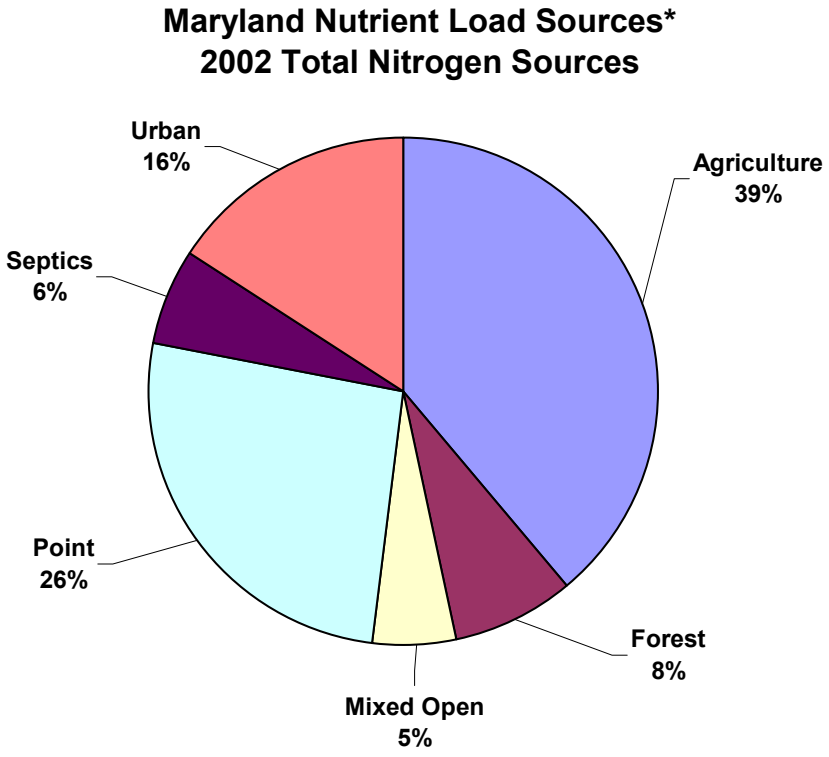
- *Watershed Planning & Implementation Efforts:* The Nonpoint Source Program will continue to lead efforts to create comprehensive watershed plans across the state to help address the impacts of nonpoint source runoff and other natural resource goals, and to facilitate and/or track the implementation of watershed plans. The Program will continue to fund watershed implementation projects that reduce nutrient and sediment loads and assist in meeting TMDL implementation goals.

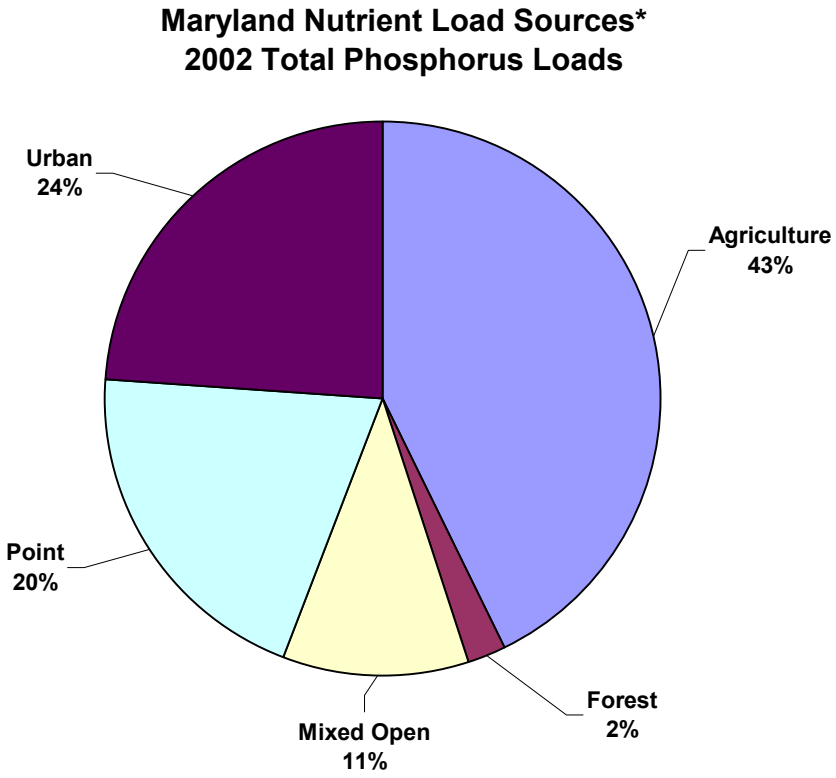
- *Environmental Design Initiative:* The Coastal Nonpoint Source Program in cooperation with the National Oceanographic and Atmospheric Administration (NOAA) will initiate a two-year effort to promote innovative environmental design techniques. Environmental design projects, demonstrating innovative stormwater management practices, will be implemented on public lands throughout Maryland's coastal zone.

- *NPS Program Efficiency and Effectiveness:* The Nonpoint Source Program will continue to administer federal grants and strive for increased efficiency and integration of related water programs, as well as accountability in allocation of funds, including improved documentation of project benefits and accomplishments. The Program will report on Maryland's progress toward achieving new national nonpoint source program goals.

What is Nonpoint Source Pollution?

Nonpoint source pollution is the major reason why water quality remains impaired in Maryland. Nonpoint source pollution is defined as polluted runoff caused by stormwater (rainfall or snowmelt) or irrigation water moving over and through the ground. As this runoff moves, it picks up and carries away pollutants, such as sediments, nutrients, toxics, and pathogens. These pollutants are eventually deposited in lakes, rivers, wetlands, coastal waters, ground waters and the Chesapeake and Coastal Bays. Nonpoint source pollution is associated with a variety of land based activities including farming, logging, mining, urban/construction runoff, onsite sewage systems, streambank degradation, etc. The most recent Chesapeake Bay model associates nonpoint source pollution to the following land use categories:





*Data referenced from the Phase 4.3 Chesapeake Bay Model. The reported statistics include all of Maryland lands within the Chesapeake Bay Watershed except the main body of the Bay.

Nonpoint Source Program Goals

The Maryland Nonpoint Source (NPS) Program plays a lead role in helping to achieve protection and improvement of Maryland's water quality by promoting and funding state and local watershed planning efforts, water quality monitoring, stream and wetland restoration, education/outreach, and other measures to reduce, prevent and track nonpoint source pollution loads. The NPS Program is key in promoting partnerships and inter- and intra-governmental coordination to reduce nonpoint sources of pollution, and helping bring both the necessary technical and financial resources to local watershed management planning, continued implementation of best management practices, and restoration of streams and wetland habitats. Program partners include State and local government, Soil Conservation Districts, private landowners and watershed associations, among others.

The NPS Program's three primary goals are:

- Reducing nonpoint source pollution;
- Restoring and protecting habitat (e.g., streams, riparian buffers and wetlands); and
- Enhancing watershed management planning and implementation to help achieve Maryland's watershed protection and restoration objectives.

Nonpoint Source Program Challenges

The Nonpoint Source Program plays a key role in coordinating and funding local and statewide nonpoint source control efforts. Demand for the Nonpoint Source Program's ability to provide services and financial assistance is increasing due to the growing need for comprehensive watershed assessment and planning, watershed implementation, increased urban development, etc. The outstanding need for implementation of nonpoint source best management practices – such as stream and wetland restoration, cover crops, riparian buffers -- led this year to $2 million worth of project proposals competing for just over $1 million in available 2004 project funds.

Nonpoint Source Program funding and state and local partnerships will be pivotal in helping Maryland achieve the Chesapeake 2000 Agreement and the Coastal Bays Management Plan goals, as well as ultimately in helping remove the Chesapeake Bay and other smaller watersheds from the List of Impaired Waters (303(d) list).

Key challenges addressed by the NPS Program in collaboration with other state efforts include:

Reducing nutrient and sediment pollution. Nutrient and sediment pollution are the main reason why our waterways remain impaired and is the foremost threats to the state's living resource habitats. Significant progress has been made in reducing nutrient nonpoint source loads through implementation of best management practices. However significant efforts still needs to be made to reduce nitrogen, phosphorus and sediment pollution.

Urban Nonpoint Source Pollution is increasing: Nutrient pollution from urban and suburban loads is growing faster than any other nutrient source impacting the Chesapeake and Costal Bays, despite the use of traditional management practices. New and innovative best management practices (e.g. environmental sensitive design) will need to address not only new development, but also development built before modern stormwater regulations took effect.

Porous Pavement (Ocean City)

- *Physical habitat destruction:* Habitat destruction continues to be a widespread source of stress on fish and other aquatic life. Physical damage to stream habitat is particularly associated with land use changes which can alter a stream's hydraulics, increase erosion and the transport of in-stream pollution.

- *On-Site Disposal Systems (OSDS)*: Maryland has approximately 400,000 septic systems today (approximately 1 in 5 households). With few exceptions residents are still using the same septic system technology that was used 50 years ago. Septic systems are located throughout the state, especially within Maryland's coastal zone. Over the last two years, Maryland's Coastal Nonpoint Source Program has worked with coastal counties to develop inventories and maps of existing septic systems and to develop OSDS management strategies to protect nitrogen sensitive waters.

- *Resource Constraints*: As local and state budgets are constricted, environmental managers must increasingly rely on grant sources to fund projects. At the same time, it is clear that a holistic watershed approach will assist local managers in focusing their resources to see measurable environmental improvements. The Nonpoint Source Program plays a key role in funding watershed planning and implementation efforts that help local governments meet their environmental objectives.

Nonpoint Source Program Overview & Project Selection Process

The allocation of §319 Clean Water Act funds and the Coastal Nonpoint Pollution Control Program funds under Section 6217 is coordinated by the Department of Natural Resources' Coastal Zone Management Division. The funds are used primarily for direct implementation (80% of funds for in-the-ground improvements) and secondarily, program management, planning and technical assistance. Projects include, but are not limited to: stream restoration, wetland creation, oyster habitat restoration, cover crop applications, clean marinas, septics management strategies, etc. The Coastal Nonpoint Source funds are currently directed within the coastal zone (comprising 66% of Maryland's area) to address local septic system management, fund clean marina programs, shore erosion control and measure nonpoint source successes. The Division ensures that the projects funded under each grant authority are complimentary and well-coordinated. These two funding sources provide only a small (but necessary) amount of the funds that are currently used by Maryland to protect and restore water quality from the impacts of nonpoint source pollution (Appendix A: Nonpoint Source Program Financial Information).

In general, program projects are selected through an interagency process. A request for proposals is distributed to representatives on the NPS Program's comprehensive mailing list and posted on DNRs' web page. Once the deadline is reached and all proposals are received, they are distributed to the NPS Steering Committee for review and ranking. The review committee includes representatives from the Department of Natural Resources, Department of Agriculture, Department of the Environment, Department of Planning, University of Maryland, Maryland's Coastal and Watershed Resource Advisory Committee and Maryland Tributary Teams. Evaluative criteria reflect both federal funding and state priorities. During the most recent interagency process evaluative criteria focused on selecting projects that had a direct relationship to drafted or completed watershed plans incorporating a draft or final TMDL. Second priority focused on projects that had a direct relationship to a drafted or

completed watershed plans but do not have a direct relationship to EPA approved nonpoint source TMDL or a TMDL scheduled for development as of July 2003. Recommended projects are then submitted to the USEPA which finally approves all Maryland nonpoint source implementation projects.

Maryland Watershed Implementation Projects

Over the last three years, the Nonpoint Source Program has funded a broad range of projects designed to control and prevent nonpoint source pollution. Streams have been stabilized and restored, riparian buffers have been planted and agricultural landowners have installed a wide variety of best management practices designed to reduce nutrient and sediment pollution. During any given calendar year, the NPS Program funds a number of watershed implementation projects. In this program, projects from overlapping grant years occur in any given calendar year, i.e., some projects are ongoing from previous years, some are ending, some are proposed or just beginning. Below is a map that portrays the location of recently funded watershed implementation projects, and summarizes their benefits. Also below is a brief description of highlighted environmental benefits from calendar year 2003 watershed implementation projects. Additional information about individual projects funded over the last three year may be accessed through the nonpoint source program website: http://www.dnr.state.md.us/bay/czm/nps/projects/projectsy.html.

2003 Grant Projects

- **Carroll Creek Restoration** –This project seeks to implement the recommendations of the Rock and Carroll Creek Forestry Master Plan and the Carroll Creek Stream Corridor Assessment. Located in Frederick County, this project will restore 2,880 linear feet of stream, and reforest approximately 24 acres that includes 15 acres of riparian buffer and creation of three acres of non-tidal wetland. Volunteer hands-on restoration training will help vegetate approximately 4 acres of riparian forest buffer. Measurable environmental results equal approximately 724 cubic yards of soil that will be removed from actual and potential stream transport. A long-term monitoring program will be conducted by Hood College.

- **Cherry Creek Restoration –** This project, identified in the Cherry Creek Watershed Study (Howard County), will use a comprehensive system of best management practices to protect and enhance riparian and aquatic habitat in the Cherry Creek, as well as reduce stream bank erosion and associated pollutants that may be carried downstream to the Rocky Gorge Reservoir. The project will stabilize 285 linear feet of stream by using bioengineering techniques such as installing plant material, seeding, live staking, mulching, and vegetated geo-grids. After implementation, an estimated 31.2 tons per year of sediments being carried downstream will be halted. Community participation, an integral part of this project, will be achieved through local schools' involvement in education and outreach projects through the Green School Mentoring Program.

- **Liberty Reservoir Targeted Watershed** – The project seeks to implement the Watershed Restoration Action Strategy for Liberty Reservoir. The objective is to enroll five farms for best management practice (bmp) implementation, install a minimum of 12 practices on these

farms, install 26 acres under the Conservation Reserve Enhancement Program and signup 800 acres in cover crop.

- **Lower Hawlings Restoration –** This project will implement the recommendations outlined in the Comprehensive Management Planning Study for the Patuxent Reservoir Watershed and it has been identified as top priority in the Hawlings River Watershed Restoration Study. This project will improve in-stream and terrestrial habitat on county parkland and reduce sediments and associated pollutants from being carried downstream to the Rocky Gorge drinking water supply reservoir through extensive bank and channel erosion. The project will restore 2,880 linear feet of stream channel and reforest riparian buffers where appropriate. Implementation of this project will result in an estimated sediment load reduction of 120 tons per year. There will be pre-and post-restoration stream biological, quantitative physical habitat, and rapid habitat assessments. A citizen volunteer component will ensure enhanced riparian reforestation and also provide for routine management of invasive plants to assure survival of project plantings through a "Weed Warrior" program (for more information see *http://www.mc-mncppc.org/Environment/weed_warriors/intro.shtm*).

Lower Hawlings River streambank erosion

- **Woodvalley Stream Restoration** – The Woodvalley stream restoration project in Baltimore City will cover 2,750 linear feet of channel including the mainstem and two tributaries. Sediment and nutrient reductions will be substantial and will be estimated upon project completion. Following construction, a three-year minimum monitoring program will be conducted to measure the effectiveness of the project. This subwatershed project will help implement the Jones Falls Watershed Water Quality Management Plan.

- **Stony Run Restoration** – The Stony Run stream restoration project in Baltimore County will restore 2,300 linear feet of stream channel and construct four wetlands. The project will quantify sediment reductions, and will include biological and chemical monitoring. The project will monitor the effects of the completed stream restoration on channel stability by establishing permanent cross-sections at several stream sections. This project is identified as high priority in the Stony Run Watershed Restoration Plan and the Stony Run Stream Stabilization study.

- **Wootton Mills Park Restoration –** This high-priority project in Rockville, identified in the Watts Branch Watershed Study and Management Plan, will restore approximately 4,000 linear feet of stream, restore a 250 riparian stream buffer, enhance existing wetlands to create 1.7 acres of wetland and upgrade existing storm drain outfalls.

2004 Grant Projects (Proposed)

- **Bishopville Wetland Restoration Project** – The Isle of Wight Watershed Restoration Action Strategy (WRAS) identified several key areas for future implementation activities including Bishopville Prong and the St. Martin River. The Bishopville wetland restoration project will create a 20 acre forested non-tidal wetland adjacent to Bunting Branch in the headwaters of the Isle of Wight Bay. The project site has previously been used as a sand and gravel mine. The project will lead to substantial reduction of sediment and nutrient inputs into the St. Martin's River.

Bishopville Wetland Restoration Project Site

- **East Branch Honeygo Run Stream Restoration** – This stream restoration project in Baltimore County will restore 3,350 linear feet of channel including the mainstem and four tributaries. The stream restoration project will reduce sediment inputs into the Chesapeake Bay. Sediment and nutrient reductions will be estimated upon project completion following construction and a three-year minimum monitoring program will be conducted to measure project effectiveness. This project helps implement the Bird River Watershed Plan. Baltimore County has restored approximately 30,000 feet of stream channel within the Bird River watershed.

- **Corsica River Cover Crops** – The Corsica River Watershed Restoration Action Strategy (WRAS) has identified the development and implementation of a cover crop program as one of its key goals. This project will target 3,000 acres under management. Based upon Chesapeake Bay Program and Maryland's Tributary Strategies best management practices efficiency ratios, this project will prevent 21,000 lbs. of nitrogen and 570 lbs. of phosphorus from entering into the Corsica River watershed.

- **Lower Monocacy River Agricultural Implementation** – This project supports implementation of the Lower Monocacy Watershed Restoration Action Strategy (WRAS). Agricultural best management practices will be implemented on land that drains to Lake Linganore. This project includes a demonstration of innovative best management practices for horse owners.

- **Oyster Habitat Restoration Project** – This project supports implementation of the Isle of Wight WRAS and the Comprehensive Conservation and Management Plan for Maryland's Coastal Bays. Two acres of new oyster beds will be established adjacent to a current St. Martin's oyster bed.

Multi-year Projects (2003 Funded/2004 Proposed)

- **Upper Choptank Cover Crop** - The development and implementation of a cover crop program has been identified as a key goal of the Upper Choptank Watershed Restoration Action Strategy (WRAS). Over two years, the cover crop program will target 12,850 acres under management. Based upon Chesapeake Bay Program and Maryland's Tributary Strategies best management practices efficiency ratios, this project will prevent 99,988 lbs. of nitrogen and 2,492 lbs. of phosphorus from entering into the Upper Choptank watershed.

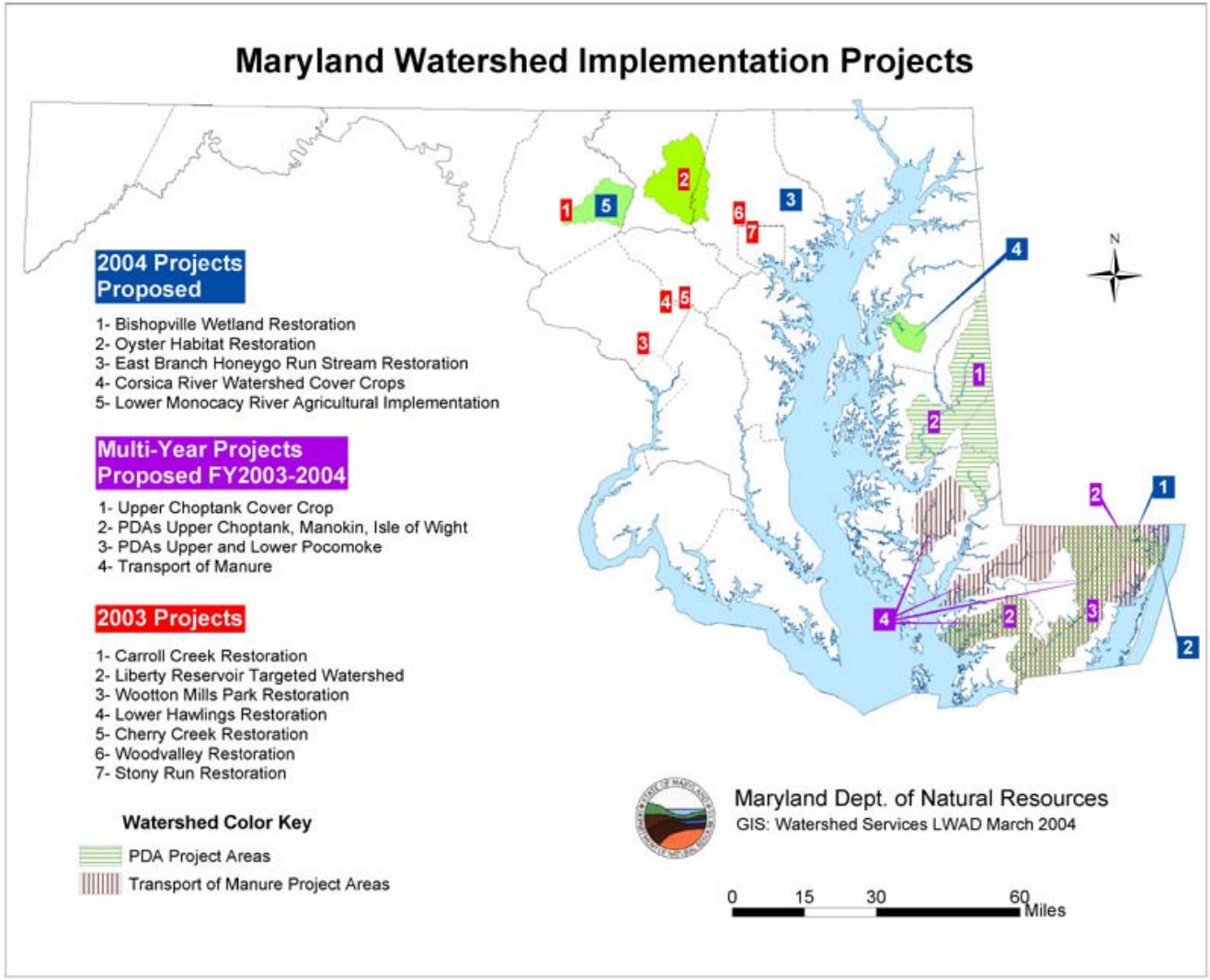
- **Public Drainage Associations (PDAs) : Upper Choptank, Manokin, Isle of Wight** – This project will implement nine management projects on Public Drainage Associations (PDAs) and demonstrate the weed wiper technology in targeted watersheds. The proposed projects will provide both sediment and nutrient control. This project has been identified as pivotal in the implementation of the Manokin and the Isle of Wight Watershed Restoration Action Strategies.

PDA Wetland Work

- **PDAs Upper and Lower Pocomoke** – This project included in the Lower Eastern Shore Conservation and Restoration Action Strategy will implement seven projects on PDAs and demonstrate the weed wiper technology in additional targeted watersheds. The proposed projects will provide both sediment and nutrient control. Once repairs and restoration are completed, estimates of the associated nutrient load reduction efficiencies can be estimated based upon sediment loss at each site.
-

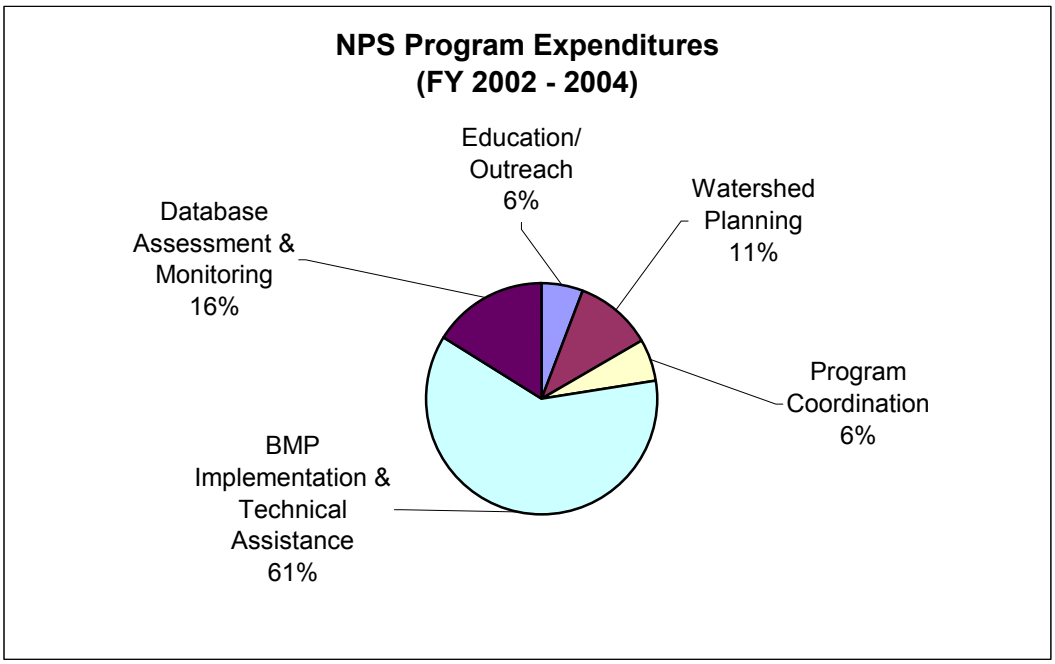
County	Name	Current Sediment Loss	N (lbs)	P (lbs)
Wicomico	Aydelotte	500 tons	1,550	120
Wicomico	Barkley Branch	250 tons	775	60
Worcester	Dividing Creek	120 tons	372	28.8
Worcester	Franklin Branch	135 tons	418	32.4
Worcester	Coonfoot	580 tons	1,798	139.2
Worcester	Double Bridges	120 tons	372	28.8
Worcester	Timmonstown	133 tons	412.3	31.9

- **Manure Transport** – This project will transport 31,500 tons of poultry litter from Dorchester, Somerset, Wicomico and Worcester counties to farms in other regions who utilize it in accordance with a nutrient management plan or to alternative use industries. Over two years, the project will remove an estimated 2,108,000 pounds of nitrogen and 1,860,000 pounds of phosphorus in the form of manure inputs from targeted watersheds. This project is key to meeting the goals identified in the Lower Eastern Shore Conservation and Restoration Action Strategy and the Comprehensive Conservation and Management Plan for the Coastal Bays.


Maryland Watershed Implementation Projects
2004 Projects Proposed
1- Bishopville Wetland Restoration
2- Oyster Habitat Restoration
3- East Branch Honeygo Run Stream Restoration
4- Corsica River Watershed Cover Crops
5- Lower Monocacy River Agricultural Implementation
Multi-Year Projects Proposed FY2003-2004
1- Upper Choptank Cover Crop
2- PDAs Upper Choptank, Manokin, Isle of Wight
3- PDAs Upper and Lower Pocomoke
4- Transport of Manure
2003 Projects
1- Carroll Creek Restoration
2- Liberty Reservoir Targeted Watershed
3- Wootton Mills Park Restoration
4- Lower Hawlings Restoration
5- Cherry Creek Restoration
6- Woodvalley Restoration
7- Stony Run Restoration
Watershed Color Key
PDA Project Areas
Transport of Manure Project Areas
N
Maryland Dept. of Natural Resources
GIS: Watershed Services LWAD March 2004
0 15 30 60 Miles

Nonpoint Source Program Benefits

Nonpoint source program expenditures generally fall into five broad categories: watershed planning, best management practices (bmp) implementation and technical assistance, database assessment and monitoring, program coordination and education/outreach. Over the last two grant years, the State of Maryland has received a total of over $9 million dollars from the Environmental Protection Agency under CWA §319 to control and prevent nonpoint source pollution. The state has matched these federal funds by spending over $6 million dollars. Program expenditures categories are summarized in the pie chart below (Additional information about program expenditures may be found in Appendix A).



An analysis of program expenditures clearly indicates the importance that is placed upon watershed planning and best management practices implementation. In Maryland, the development of watershed assessments and plans is provided by both nonpoint source funds and funds from NOAA's Coastal Zone Management Program award. These resultant watershed plans help target the implementation of best management practices to more efficiently meet multiple environmental objectives. The NPS program's support for watershed planning, helps local governments identify a broad range of financial and technical resources needed to implement their watershed plans. The NPS program also assist implementation efforts by funding a variety of watershed projects (stream restorations, buffer plantings, cover crops, etc.). The program continually strives toward maximizing program funds allocated toward implementation activities. In 2002, 58% of all program funds were directed toward bmp implementation and technical assistance. In 2004, this amount rose to 62%. At a time when federal and now state funding has remained level or is even potentially decreasing for nonpoint source pollution prevention and control, section 319 funds are key to local governments identifying and implementing watershed projects that will produce measurable environmental results.

2003 Program Accomplishments

In the past year, the NPS Program has had notable program accomplishments and successes discussed below. Progress was made in implementing best management practices in all nonpoint source areas through the provision of technical assistance, project funding or both. For a list of § 319-funded projects, see http://www.dnr.state.md.us/bay/czm/nps/projects/projectsy.html. Programmatic efforts included:

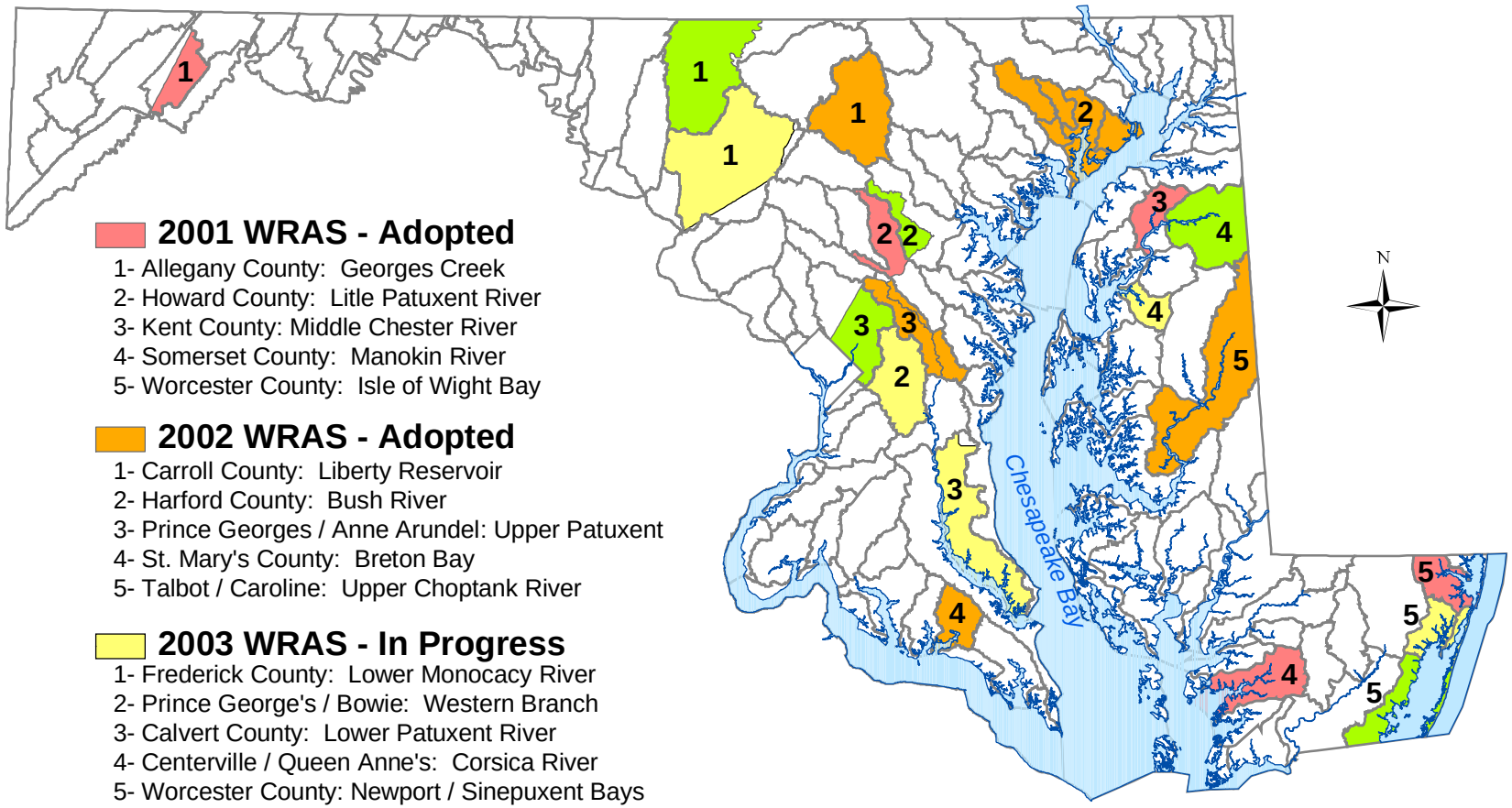
- Watershed Restoration Action Strategies
- Maryland Watershed Management Planning Strategy Development
- Nonpoint Source Total Maximum Daily Loads: Implementation
- Coastal Nonpoint Program Implementation Work Groups
- Onsite Sewage Disposal System Management Initiatives
- Agricultural Programs
- Nonpoint Source Program National Work Groups
- Progress in Related Programs: Clean Marinas, Tributary Strategies, Maryland Biological Stream Survey, Stream Waders Program

Watershed Restoration Action Strategies Partnership (WRAS) Program

The signature effort of Maryland's NPS Program is the WRAS Program, funded and assisted in collaboration with Maryland's Coastal Zone Management Program. The WRAS Program provides local governments with extensive watershed technical assessment and support and restoration services. The goal of WRAS-sponsored watershed planning is to protect and restore water quality and habitats. WRASs help local governments to assess and prioritize environmental needs, and implement restoration and protection projects by providing a wealth of local-scale data to assist with priority setting. In addition, the WRAS program helps ensure that other entities within DNR, and entities outside of DNR, such as MDE and MDA, SHA, etc., are coordinating, targeting and leveraging their efforts in priority watersheds. Each year the WRAS Program, through a competitive process, selects five more county or municipal governments to develop a WRAS. Each WRAS take two years to develop and thus ten WRASs are on going at any given time. DNR has a goal of completing 50 WRASs by 2010.

Watershed Restoration Action Strategy (WRAS) Status

October 2003



2001 WRAS - Adopted

1- Allegany County: Georges Creek
2- Howard County: Litle Patuxent River
3- Kent County: Middle Chester River
4- Somerset County: Manokin River
5- Worcester County: Isle of Wight Bay

2002 WRAS - Adopted

1- Carroll County: Liberty Reservoir
2- Harford County: Bush River
3- Prince Georges / Anne Arundel: Upper Patuxent
4- St. Mary's County: Breton Bay
5- Talbot / Caroline: Upper Choptank River

2003 WRAS - In Progress

1- Frederick County: Lower Monocacy River
2- Prince George's / Bowie: Western Branch
3- Calvert County: Lower Patuxent River
4- Centerville / Queen Anne's: Corsica River
5- Worcester County: Newport / Sinepuxent Bays

2004 WRAS - Recently Initiated

1- Frederick County: Upper Monocacy River
2- Howard County: Patapsco River LN Branch
3- Prince George's County: Anacostia River
4- Kent and Queen Annes County: Upper Chester River
5- Worcester County: Chincoteague Bay

Maryland Dept. of Natural Resources
Watershed Services
Land and Watershed Analysis Div.
WRAS Project

0 10 20 40 60 80 Miles

1:1,800,000

The WRAS Program has grown since its inception in 2000; developing strong and collaborative relationships with local governments, Soil Conservation Districts, urban and rural citizens, the National Park Service's RTCA Program, and local watershed associations. The WRAS Program provides stakeholders with integrated scientific information, funds, and technical assistance for assessing watersheds and setting priorities to address multiple objectives. The enhanced targeting and priority-setting from watershed planning results in restoration and conservation activities designed to maximize environmental benefits and meet multiple natural resource management objectives.

The WRAS Program promotes strategic implementation of watershed protection and restoration activities primarily through support of:

- **Local Watershed Assessment:** DNR provides technical resources to local governments and associated stakeholders including:
    - Extensive stream corridor assessment surveys (up to one hundred miles per watershed). The stream corridor assessment surveys provide a list of environmental problems present with a watershed's stream system and riparian corridor. The survey provides sufficient information on each problem so that a preliminary determination of both its severity and restoration potential can be made.
    - Field surveys including water quality analysis; fish and benthic sampling and assessment services; and a
    - Watershed characterization that is a compilation of current, historical, and forecasted land use, environmental and other natural resource information to support development of local watershed restoration plans and identify and prioritize restoration projects (for WRAS products see http://www.dnr.state.md.us/watersheds/surf/proj/wras.html).

- **DNR Project Coordination and Funding:** In addition to funds for planning, each WRAS has a DNR coordinator to facilitate delivery of state and/or federal technical assistance.

- **Restoration Project Implementation:** DNR helps coordinate technical and financial assistance for implementation of various projects such as wetland or riparian restoration, while leveraging resources from private and public partners.

The year 2003 saw the completion of the second year's WRASs (WRAS Class 2002) and the evaluative WRAS Roundtable (see WRAS Program Refinement below), plus the funding for implementation of WRAS 2002 projects, for WRAS 2003 planning, and WRAS 2004 selection. In addition to these efforts, two WRAS watersheds (the Corsica River and the Lower Monocacy) were nominated to EPA for the watershed initiative process. Participants in the proposals' development found the process valuable in enhancing ongoing cooperation and communication, and noted that in each case increased activity and coordination in these watersheds will likely result.

WRAS Program Refinement: One of the objectives of the WRAS Program is to institute refinements based on program experience. To gain local government participant input and perspective, a first WRAS Roundtable was held on July 17, 2002 and the second Roundtable was held in 2003. The morning session was devoted to presentations by each of the WRAS local government representatives, who summarized the process and results of their competed WRASs. The afternoon session was devoted to a group process technique identifying core issues, threats, opportunities, and strengths of the WRAS effort. The analysis and process proved very useful, informative, and insightful and will help shape and give direction to the future WRAS Program. Results are summarized below.

Summary of Roundtable Analysis: Local Government Perspective

Strengths and weaknesses:

X In 2003, WRASs continued to be a valuable capacity-building exercise that provided the counties and stakeholders an opportunity to collaboratively focus on specific watersheds, watershed issues, and goals. The collaborative process and securing citizen involvement however was difficult for most counties to successfully obtain.

X In 2003, data synthesis and analysis were provided with the Characterization (a summary of readily available data), the Stream Corridor Assessment study (SCA), the Synoptic Water Quality and Benthos/Fish Surveys (Synoptic Survey), and other special studies (e.g., Forest Assessment Methodology). These continued to be highly valued.

X In 2003, overall responsiveness provided by DNR continued to recieve high marks and the coordinators were highly valued. Coordinator qualities cited included: willingness to attend meetings, grant process support, organizational skills, persistence, keeping the process moving, developing time lines, being tenacious, and providing encouragement.

X The management of data and the inclusion of the public in WRAS development continued to be challenging.

WRAS mid-course corrections institutionalized:

- In 2003, DNR instituted additional support to the local governments to make DNR data and technical services more "user friendly." To accomplish this, DNR collaborated with the National Park Service to set up a watershed conference for the 2004 WRAS Class. By design, the focus was: utilizing data and managing it to make management decisions, and the cultivation of public and stakeholder participation during WRAS development and implementation.
- In 2003, local governments found difficulty in completing the data analysis by the end of the grant cycle. The Program was responsive to this difficulty and thus provided DNR's technical services first, followed by financial and technical support assistance, thus allowing the end of the grant cycle to be in synchronicity with the end of the WRAS development cycle.
- In 2003, DNR collaborated with the National Park Service to plan and provide support to local governments so that they could develop and institutionalize public participation and stakeholder involvement as a stronger component in WRAS development process and future implementation.

Maryland Watershed Management Planning Strategy Development: The Chesapeake Bay's Watershed Commitments Task Force (CWiC) is working Bay-wide to help signatory states meet the 2/3 watershed management planning commitment in the Chesapeake Bay 2000 agreement (see http://www.chesapeakebay.net/agreement.htm Watersheds section) Members of the Bay's CWiC include representatives of the 4 Bay signatory states (Maryland, Pennsylvania, Virginia and the District of Columbia), the federal Chesapeake Bay Program partner agencies, as well as local government and watershed association representatives. Maryland has also established a workgroup to develop a State specific Strategy to meet the Bay Agreement goals. The Maryland Watershed Management Planning Workgroup members include representatives from local governments, and the Departments of Planning, Environment, Transportation, Agriculture, as well as DNR.

In order to accomplish the 2/3 watershed management planning commitment, the CWiC taskforce identified the following key tasks:

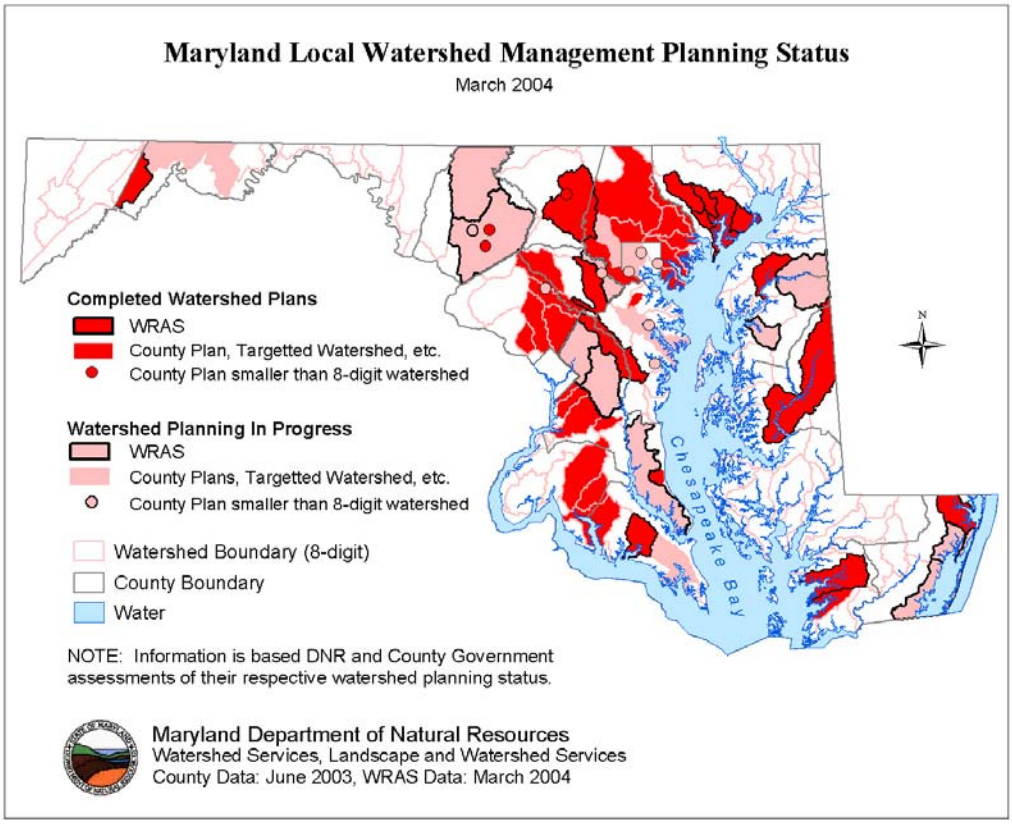
- Identify the criteria and process for counting watershed management plans called for by the Chesapeake 2000 Agreement;
- Create and implement jurisdictional watershed management strategies, based on these criteria, to guide watershed management planning at a community or local government level; (Maryland's Strategy was adopted by the Governor's Chesapeake Bay Cabinet on October 24, 2003);
- Inventory the current status of watershed planning and ascertain the best ways to track progress towards the Chesapeake 2000 Agreement watershed management goals;
- Identify the tools that local governments, community groups and watershed organizations need in order to create watershed management plans; and
- Determine how to most effectively deliver these tools to the local governments, community groups and watershed organizations.

The CWiC taskforce is divided into three workgroups: 1) Criteria, 2) Inventory and Tools, Training, Marketing, and, 3) Outreach & Incentives Workgroup. Each workgroup has made significant progress toward achieving overall taskforce goals.

- The Criteria Workgroup has developed minimum criteria for counting watershed management plans and has drafted jurisdictional watershed management strategies based upon this criteria;
- The Inventory Workgroup has conducted a major survey of local (county) governments to assess the existence of watershed plans. Each state refined the inventory to determine the content and scope of the plans developed. Please see the map entitled, "Watershed Management Planning Status" (see page 21), provides an overview of watersheds that have completed plans, and plans underway. To date, 27 % of the state's area within the Bay watershed has or will be covered with watershed management plans -- after the completion of those in progress; and,
- The Tools, Training, Marketing, Outreach and Incentives Workgroup has created a Community Watershed Assessment Handbook and a web-based Clearinghouse of Community Watershed Resources.

Next steps for the CWiC taskforce include:

- Community Watershed Dialogue Workshops in Pennsylvania, Maryland and Virginia: These workshops will support outreach to local government and community groups to encourage and support local watershed management planning. In January 2004, Maryland will hold its Community Watershed Dialogue with its 2004 WRAS partners (e.g. Frederick, Prince George's, Queen Anne's/Talbot, Howard and Worcester counties). The dialogue is an initiation of the overall planning process and will assist these counties in reaching out to citizens and encouraging their participation in WRAS development and implementation. The watershed dialogue will provide counties with the tools necessary for more successful planning and implementation effort;
- Development of virtual and actual toolkits for local watershed management planning related materials and resources that includes state and local resources; and,
- Development of state-specific watershed management planning guidance and outreach as part of the jurisdictional strategies.



Nonpoint Source TMDL Implementation: The Department of the Environment is responsible for the development of Total Maximum Daily Loads (TMDLs) for impaired waterways. While MDE is responsible for developing TMDLs, DNR is helping define TMDL implementation for nonpoint sources. Nonpoint source program funds have been directed toward projects in watershed with watershed plans and TMDLs. WRAS watershed assessments activities are providing monitoring data which MDE is using to refine TMDL estimates. At the same time, DNR has both supplied and reviewed MDE data gathered to validate TMDL models in given watersheds. The NPS Program has been an active participant in the interagency TMDL Work Group for several years. The Work Group meets monthly to discuss TMDL policy and issues, as well as project-specific TMDL development information. The Department of Natural Resources and the Department of the Environment are working jointly on defining Maryland's TMDL implementation strategy and vision.

Coastal Nonpoint Program Implementation Work Groups

The national Coastal Nonpoint Program is shifting emphasis from program approvals to implementation. NPS Program staff have taken lead roles in several national Coastal Nonpoint Program Work Groups and Task Force efforts to strengthen and refine the CNP Program. Maryland staff helped plan and attended the Spring 2003 Coastal Nonpoint Source Meeting held in Richmond, Virginia.

The primary goal of the meeting was for federal and state partners to jointly develop specific recommendations for Coastal Nonpoint Program implementation and administration for consideration by all state managers and federal staff. This was further defined through two objectives:

1. Identify and prioritize the impediments (issues) to moving forward with implementation of the Coastal Nonpoint Program (CNP)
2. Identify possible solutions for the identified issues

The goal and objectives were based on a work group process that was utilized to develop four white papers. The white papers reviewed existing statutes and guidance to identify a set of primary issues and provide discussion items for addressing the issues. Thirty-two people from 17 states, EPA, and NOAA participated in the work group process throughout the three-day meeting. In addition to chairing the Evaluation and Reporting subgroup, staff participated in the Conference Planning Committee, and review of the Coordination, Monitoring and Tracking, and Implementation subgroup white papers and planning efforts.

Onsite Sewage Disposal Systems Management Initiatives:

There was increased emphasis in the last few years on management of Onsite Sewage Disposal System (OSDS) impacts. This year, we advanced OSDS management efforts by funding various projects with National Oceanic Atmospheric Administration's Coastal Nonpoint Section 6217 and other funds, participation in the new Chesapeake Bay Tributary Strategies Development process, and joint sponsorship of a Coastal Decision-Makers Workshop on nitrogen reduction from OSDS which was conducted in Spring 2003. In cooperation with the

Maryland Department of the Environment, the Department of Natural Resources is using federal Coastal Nonpoint Source Program funds (Section 6217) to help coastal counties manage septic impacts. These projects are described below:

- Eight counties are completing development of accurate inventories, databases, and maps of properties served by septic systems. The inventories have identified areas of increased monitoring due to potential water quality impacts, areas that should be hooked-up to sewer systems, and areas where homeowners may be targeted for outreach on system maintenance. This work is key to local government's ability to reduce the impacts of septic systems and protect environmentally sensitive areas.

- Four counties and one tri-county council are continuing to develop OSDS management strategies based upon protection of nitrogen-sensitive waters. The strategies are being designed as transferable examples to help ensure that OSDS are appropriately sited, designed, operated, and maintained. Under this grant, localities will delineate nitrogen sensitive waters; develop an appropriate OSDS management plan; and propose regulatory changes or programs to successfully implement the plan. These program changes could include: incorporating requirements to strengthen the OSDS inspection, maintenance and / or replacement processes, or establishing programs to increase the use of innovative OSDS.

- The University of Maryland, Center for Environmental Science, was granted an award to conduct a demonstration study to support local government quantification of septic system input to surface waters. Funds have been used to assess and map the plumes of sewage and septic derived nitrogen within the Choptank and Patuxent Rivers (with a special focus on Island Creek) to assist with planning and targeting of local watershed strategies. Project results demonstrated that both rivers were compromised with sewage derived nutrients with elevated nitrogen ratios occurring near to and downstream of wastewater discharges. Concentration of water column nitrogen and phosphorus, chlorophyll a and dissolved oxygen varied throughout the rivers. Four reporting region were defined for each river and an assessment of ecosystems health was made for each region. Overall, project results indicated that the ecosystem health of the Patuxent River was rated higher than the Choptank River. The ecosystem health of Island Creek, located in the lower reaches of the Patuxent, was lower than the mean value for the entire Patuxent River. Island Creek receives no inputs from sewage treatment plants, only septic outfalls from the residences along the creek.

- Together with the Maryland Chesapeake Bay Tributary Strategies Development Workgroup and the National Estuarine Research Reserve, the Coastal Nonpoint Program planned and conducted Coastal Decision-Makers' Workshop entitled: "Reducing Nitrogen Pollution from Septic Systems " on March 12, 2003 at Patuxent Wildlife Center. Nitrogen is the key type of pollution targeted by the Chesapeake Bay clean-up effort at present. The agenda topics included national, regional and local perspectives on:
    - •Impacts of Septic Systems on Water Quality

- Alternative Technologies
- Management & Policy Issues:
    - Identifying the Problem
    - Mapping Areas of Special Concern (nutrients)
    - Ensuring Maintenance of Nitrogen-removing Systems
    - Maintenance Challenges & Options

Coastal Nonpoint Source Program Environmental Design Initiative

Over the next two years, Coastal Nonpoint Source funds will be directed toward innovative landscape design techniques to reduce urban nonpoint source pollution and to protect and restore local streams and watersheds. This Environmental Design Initiative will provide a showcase for developers, local officials and the public to see first hand how such innovative urban best management practices work. A variety of environmental design technologies will be demonstrated, including but not limited to: pervious construction materials, grid pavers, porous pavement, landscape infiltration gardens, stormwater planters, roof meadows, rain collection devices (cisterns, rain-barrels, etc) and parking-lot bioretention areas/rain gardens. 2004 and 2005 Coastal Nonpoint Source funds will be directed toward demonstrating environmental sensitive designs techniques.

Agriculture

Good water quality is the most critical element in the overall restoration and protection of the Chesapeake Bay, the Coastal Bays and their tributaries for the support of living resources and to ensure safe drinking water supplies and other beneficial uses. Agricultural activity, human population growth, development activities, atmospheric deposition and septic systems are each contributing nonpoint source pollution in the form of sediment, nutrients and other potential pollutants which affect the State's surface and ground waters.

A strong agricultural industry and a healthy environment go hand in hand. The Chesapeake Bay Watershed Model indicates that Maryland farmers achieved the majority of year 2000 water quality objectives in every major watershed and continue to exceed their goals for implementing best management practices (BMPs) to manage nutrients, control erosion and protect water quality. As we move ahead into the future, agricultural and soil conservation partners will continue to preserve Maryland's rural legacy by developing and promoting farming practices that are both environmentally sensitive and economically sound. Maryland has a variety of agricultural programs (Nutrient Management Program, MD Agricultural Water Quality Cost Share Program, Soil Conservation and Water Quality Planning, Conservation Reserve Enhancement Program, Manure Transport Program, and Agricultural Water Management Program) described below that address the control and reduction of nonpoint source pollution.

Nutrient Management /Water Quality Improvement Act (WQIA)

In 1998, the Maryland General Assembly passed landmark legislation that placed Maryland at the forefront of national efforts to protect water quality. The Water Quality Improvement Act (WQIA) established both short and long-term strategies for reducing nutrient levels in our streams, rivers and Chesapeake and Coastal Bays. The most significant feature of the Act is a provision requiring nutrient management plans for virtually all Maryland farms.

The WQIA changed the nutrient management program from it's voluntary status to a regulatory program. It requires farmers who use chemical fertilizers to submit a nitrogen and phosphorus based nutrient management plan to the Maryland Department of Agriculture (MDA) by December 31, 2001 and implement it by December 31, 2002. Farmers who use animal manure or sludge must have and implement nitrogen based plans by the same dates as those who use chemical fertilizers. Those who have sludge or animal manure have until July 1, 2004 to submit phosphorus based nutrient management plans and must implement them by July 1, 2005. Although the new law includes a number of deadlines and requirements, it also offers many new incentives aimed at helping farmers comply.

By the end of calendar year 2003, over 75% of farmers managing 85% of Maryland's agricultural land were in compliance with the WQIA. As of December 31, 2003, Maryland farmers officially submitted nutrient management plan information for over 1.3 million acres of agricultural land. The information submitted includes 5,211 completed nutrient management plans covering 1,076,252 acres. Another 1,492 farmers submitted information on a Justification for Delay form indicating they were still working with a consultant to develop their plans on a total of 259,647 acres.

On August 5, 2003, MDA hosted a one-day summit for farmers, nutrient management consultants, scientists, agricultural organizations, environmental groups and other interested stakeholders to discuss ways to streamline the Nutrient Management Program and make it more effective in protecting water quality. More than 300 stakeholders attended, meeting in small groups to brainstorm issues ranging from who should be covered by the law, to enforcement and recordkeeping requirements. Over 50 recommendations were made for improving the program, some of which will be utilized to propose legislative changes to streamline the program and that are anticipated to simplify and accelerate compliance.

During 2003, more than 1000 people attended 26 training workshops on a variety of topics ranging from advanced phosphorus planning to nutrient management planning for pastures. Core topics on the fundamentals of nutrient management, the Phosphorus Site Index and how to write a nutrient management plan were also offered.

More than 185 farmers attended 21 nutrient applicator voucher training sessions in 2003. Applicator training courses are required by the WQIA for farmers who apply nutrients to 10 or more acres of cropland.

For more information on available publications and program information, please see the MDA Nutrient Management website at http://www.mda.state.md.us/nutrient/nutmgmt.htm

Maryland Agricultural Cost Share (MACS)

State and federal funds are used to provide grants to Maryland farmers for the installation of best management practices (BMPs) to address existing or potential water pollution conditions associated with farming activity. Farmers may receive up to 87.5% of the cost of approximately 30 eligible BMPs. For more detailed information on the program, see the MACS website at: http://www.mda.state.md.us/resource/mawqca10.htm

In state fiscal year (SFY) 2003, farmers installed over 3500 BMPs using $9.2 million provided through MACS. Farmers participating in the program invested over $1 million of their own money for these practices which collectively will prevent 1.7 million pounds of nitrogen and 74,000 pounds of phosphorus and 19,630 tons of soil annually from impacting Maryland waterways and improve management of an estimated 1,860 tons of animal manure daily.

In 2003, MACS expanded the cover crops program eligibility statewide. Cover crops are used as a tool to prevent soil erosion and control nutrient movement following crop harvest. Farmers used $2.3 million in state funds to plant over 117,000 acres of cover crops and a federal incremental grant for $250,000 supported installation of over 12,600 acres of cover crops in Antietam, Catoctin Creek and Monocacy watersheds. In 2003, these cover crops prevented movement of an estimated 1,101,600 pounds nitrogen and 26,000 pounds of phosphorus.

MACS provided more than $3.4 million in cost share for BMPs installed and bonus payments for enrollment of sensitive land into the Conservation Reserve Enhancement Program in 2003. Additionally MACS funded over 500 nutrient management plans developed with the services of private sector consultants. These plans were developed with $ 735,000 in cost share support and affected 206,000 acres of agricultural land.

Soil Conservation and Water Quality (SCWQ) Program

Soil Conservation and Water Quality (SCWQ) Plans are at the heart of Maryland's resource conservation and protection efforts. Developed and implemented through a local delivery network of soil conservation districts, these plans help farmers manage natural resources and identify and solve potential environmental problems while reaching optimal but sustainable production goals. SCWQ plans contain a menu of best management practices (BMPs) to help farmers prevent sediment, nutrients and fertilizers from impacting nearby waterways.

As of 2003, soil conservation and water quality plans (SCWQP) had been developed for 65% of the farmland in Maryland and implemented on 55% of Maryland's farmland. In 2003, 1,100 soil conservation and water quality (SCWQ) plans were developed for 103,000 acres with an associated 5700 BMPs installed. Plans are considered current for a maximum of ten years. In addition to planning acreage for new cooperators, local Soil Conservation Districts (SCDs) keep a rolling tally of acreage planned in the past and have an ongoing system of regular updates. In 2003, 950 existing SCWQ plans were updated to ensure their continued effectiveness in manage 125,000 acres and protecting natural resources..

Conservation Reserve Enhancement Program (CREP)

Maryland was the first state to take advantage of the innovative Conservation Reserve Enhancement Program (CREP),which allows states to focus on natural resource issues of the greatest local concern. Under the program, Maryland landowners can protect sensitive streamside areas and highly erodible lands and restore wetlands. CREP provides annual rental payments for 10 –15 years and cost share for installing BMPS to conserve these sensitive resource areas. Since program initiation in October of 1997, Maryland landowners have protected over 68,500 acres of these sensitive lands through CREP enrollment and BMP installation. During calendar year 2003, farmers enrolled a total of 15,207 acres in CREP. Included in this total are over 14,000 acres of riparian buffers, and 445 acres of restored wetlands. For additional information see the CREP website: http://www.mda.state.md.us/resource/crep.htm

Manure Transport Program

The Manure Transport Program provides support to animal producers who have excess manure and need to find alternative means of managing it in order to be in compliance with the WQIA. The two-fold objectives of the program include subsidizing the cost of transporting animal manure to make it affordable for animal producers to address excess manure and providing an incentive for the development of alternative technologies and business ventures to create a market for use of animal manures. In SFY 2003, participants received over $463,000 to transport over 28,500 tons of manure from areas with high phosphorus levels. See http://www.mda.state.md.us/nutrient/transport.pdf for more information.

Operations receiving manure for land application under the program must apply it in accordance with a nutrient management plan prepared by a certified consultant. Receiving operations with alternative uses for manure are also eligible to participate. Current alternatives to direct land application include the use of poultry litter as a substrate for growing mushrooms and the manufacture of fertilizer pellets by Perdue AgriRecycle for use in landscaping and shipment to other regions of the country. To date, practically all of the manure transported has been poultry litter. Reimbursement for all participants is capped at $20 per ton. Fifty percent or over $229,000 of the cost of transporting poultry litter was paid by commercial poultry companies in 2003. Livestock producers receive up to 87.5% of transport costs from public funds.

Agricultural Water Management Program

The Maryland Department of Agriculture (MDA) regulates agricultural public drainage facilities administered as Public Drainage Associations (PDAs). PDAs are independent political subdivisions with local taxing authority and cover over 850 miles of drainage ditches in the coastal zone, mostly on the Eastern Shore. The PDAs are required to develop and implement approved operation and maintenance plans which address sediment control and water quality protection.

MDA assists PDAs to conduct biannual inspections and provides technical assistance through the SCDs. Typical best management practices include vegetative filter strips and channel stabilization.

Over the last four years the Maryland Department of Agriculture, Resource Conservation Program has effectively used incremental nonpoint source program funds to promote and coordinate a program to support progressive maintenance techniques and BMP's that allow continued drainage but also provide environmental benefits consistent with the Chesapeake Bay Program goals. To date, funding has provided improvements in 29 PDAs by promoting the construction of wetland areas, installation of water control structures to slow water movement and grade control structures, and repair and stabilization of bank blowouts caused by storm events. Routine maintenance practices such as mowing or channel clean outs are supported with local funds from tax revenues.

Nonpoint source program incremental funds that went towards implementation of innovative BMPs was leveraged by State funds and local funds raised through taxing landowners beneficiaries. The Soil Conservation Districts, PDA Coordinators and National Resource Conservation Service (NRCS) engineers' time in planning, design, permit applications, construction checks and final approval were all services provided as in-kind and free to landowners and PDAs.

Nonpoint Source Program National Work Groups

Maryland staff provided input and coordination in several national and regional Work Groups including the national §319 Results/Performance and Outreach Work Groups. The Results/Performance workgroup sought to develop national measures/goals for the nonpoint source management program. New national program measures recommended by the Results/Peformance Workgroup focuses on three main areas: reducing nutrient and sediment loads; implementing watershed plans and removing waters from the impaired waters list. Preliminary measures included:

- Through 319(h) funded projects, nitrogen loadings will be reduced by 329,000 pounds annually; phosphorus loadings will be reduced by 110,000 pounds annually; and, sediment loadings will be reduced by 22,000 tons;

- By 2008, at least 50 watershed-based plans covering 5000 river miles/lake acres/estuary square miles and supported under Section 319(h) since the beginning of FY 2002 will have been substantially implemented; and,

- 250 primarily NPS-impaired waters impaired as of 1998 will partially or fully attain designated uses by 2008, and 700 primarily NPS-impaired waters impaired as of 1998 will partially or fully attain designated uses.

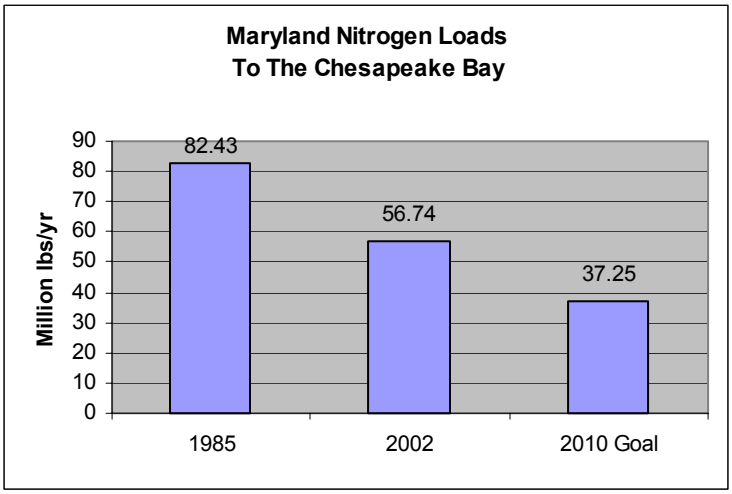
National nonpoint source program goals are currently being refined by the Environmental Protection Agency, in consultation with the Office of Management and Budget. Final program goals will be established in 2004. The Maryland Nonpoint Source Program will report its progress toward these national goals

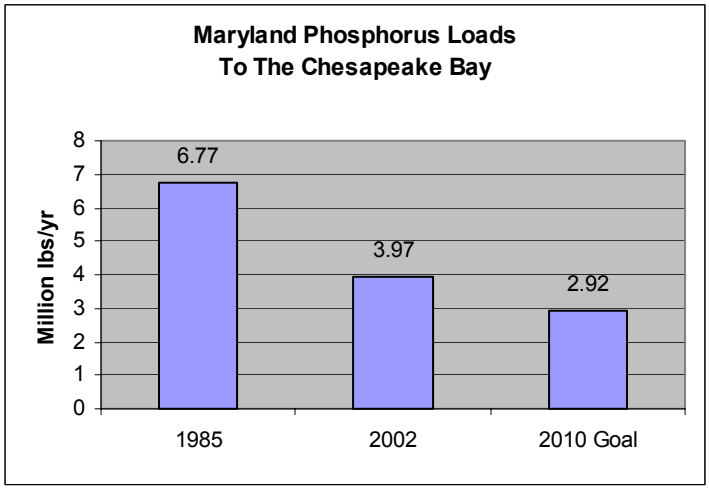
Other Related Programs:

Clean Marinas: Maryland is viewed as the national leader in its early efforts to establish a Clean Marina Program. Clean Marinas provide certification of public and private boating facilities as Maryland Clean Marinas (as part of Maryland's Coastal Zone Management plan, in response to §6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990). Through agreement with EPA and NOAA, Maryland must certify 25% of its boating facilities as Clean Marinas in order to avoid potential additional regulation of the marina industry. As of the end of 2003, there were 68 Certified Clean Marinas and 15 Certified Clean Marina Partners (83 total towards the goal of 150 facilities certified by the end of 2004 --out of a universe of about 600 potential facilities). Eighty-nine additional marinas have signed pledges.

Tributary Strategies Program: The Tributary Strategies Program was created to reduce Maryland's nitrogen and phosphorus pollution to the Bay, through a cooperative effort by state agencies, local governments, Tributary Teams and others. Since 1985, Maryland has implemented programs and practices that resulted in a 31% reduction in nitrogen and a 41% reduction in phosphorus. Maryland will need to continue its progress to meet new nutrient reduction goals (see charts below) agreed upon in March 2003. New Tributary Strategies, based upon these goals and other commitments outlined in the Chesapeake Bay 2000

Agreement, will be completed in April 2004. These new strategies are key in statewide efforts to restore and protect the Chesapeake Bay. Please see Appendix B for the most recent best management practices implementation totals.

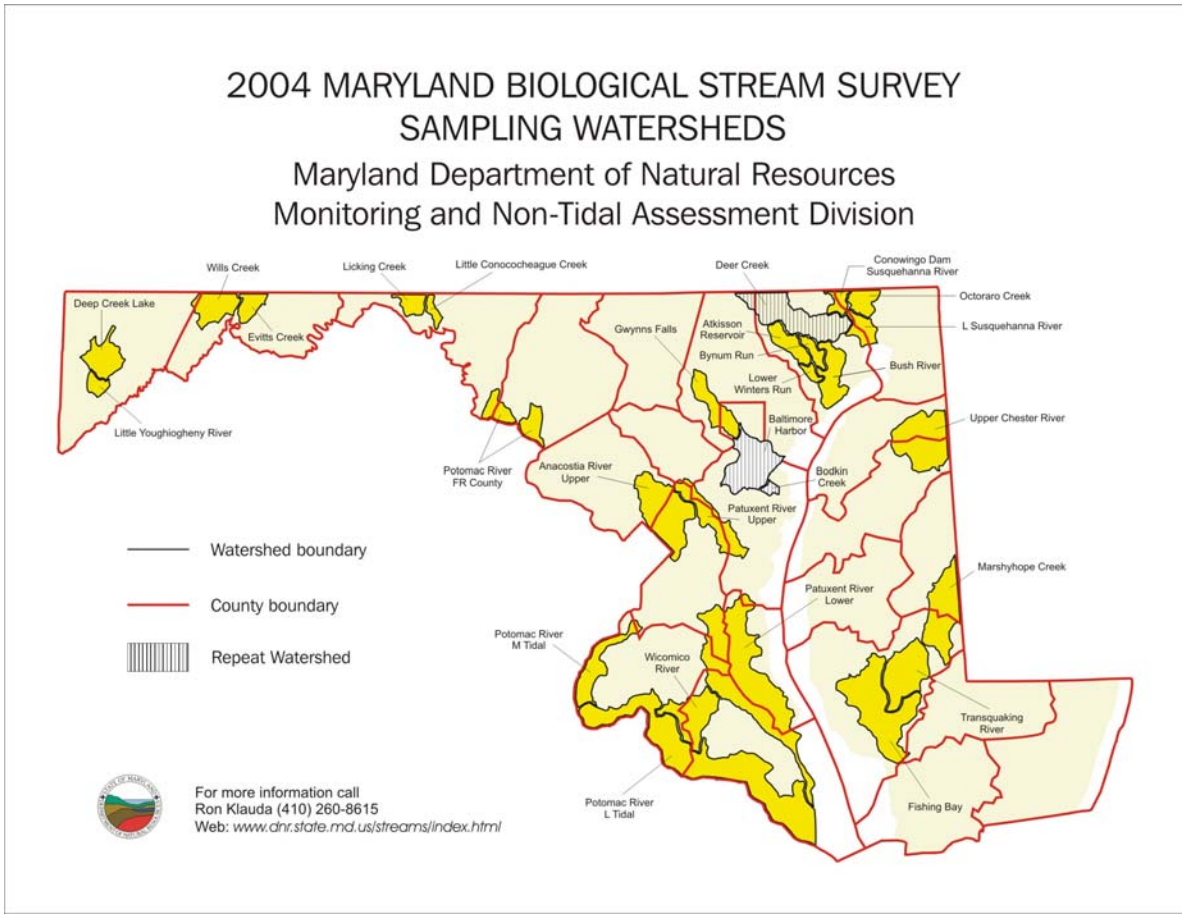




Maryland Biological Stream Survey (MBSS): The MBSS is intended to provide unbiased estimates of the condition of streams and rivers of Maryland on a local (e.g., drainage basin or county) as well as a statewide scale. To date, the MBSS has focused on wadeable, headwater streams. The MBSS is a survey based on a probabilistic stream sampling approach where random selections are made from all sections of streams in the state that can physically be sampled. The approach supports statistically-valid population estimation of variables of interest (e.g., largemouth bass densities, miles of streams with degraded physical habitat, etc.). When repeated, the MBSS provides the basis for assessing future changes in ecological condition of flowing waters of the state.

MBSS has been monitoring the non-tidal streams of Maryland since 1993. A stratified random survey design is used and nearly 2000 sites have now been sampled for physical habitat, water chemistry, and biota. The survey results have provided information to assess status and trends, identify outstanding and degraded waters, identify stressors and stressed areas, establish a biological inventory of stream biota, and document the response of the stream network to collective management activities such as watershed restoration and TMDL implementation. For further information, see http://www.dnr.state.md.us/streams/mbss/index.html

The current statewide cycle of surveys began in 2000 and will be completed in 2004. MBSS data provide valuable insights into the cumulative impacts of acid rain and acid mine drainage, urban and agricultural runoff, and point source discharges on streams and help to direct habitat restoration and protection actions, including support of Watershed Restoration Actions Strategies. Below is a map that portrays the watersheds that will be sampled by MBSS program this upcoming year.

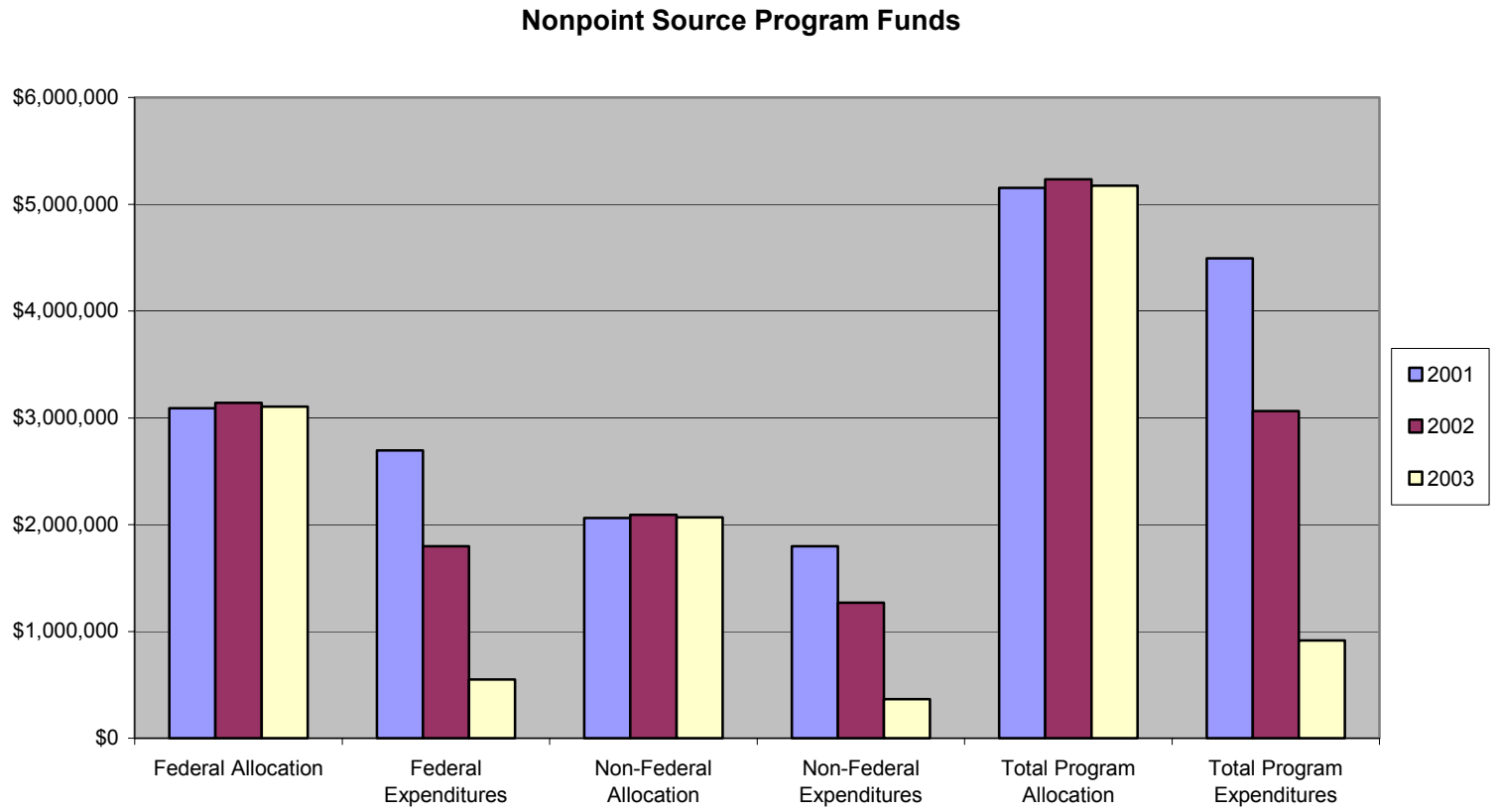


Maryland Stream Waders: The Stream Waders program is a volunteer stream sampling program managed by DNR's Monitoring and Non-Tidal Assessment (MANTA) Program. The Stream Waders program began in February 2000. Each year, about 200 citizen volunteers and teachers learn about stream ecology and impacts of land use on streams "in their backyards," while also providing valuable data on stream health. Information gathered by volunteers helps DNR, MDE, and local governments target and evaluate stream restoration projects. In 2003, stream waders sampled over 20 Maryland watersheds. More information about the Stream Waders program, including sample data, may be accessed, at: http://www.dnr.state.md.us/streams/mbss/mbss_volun.html .

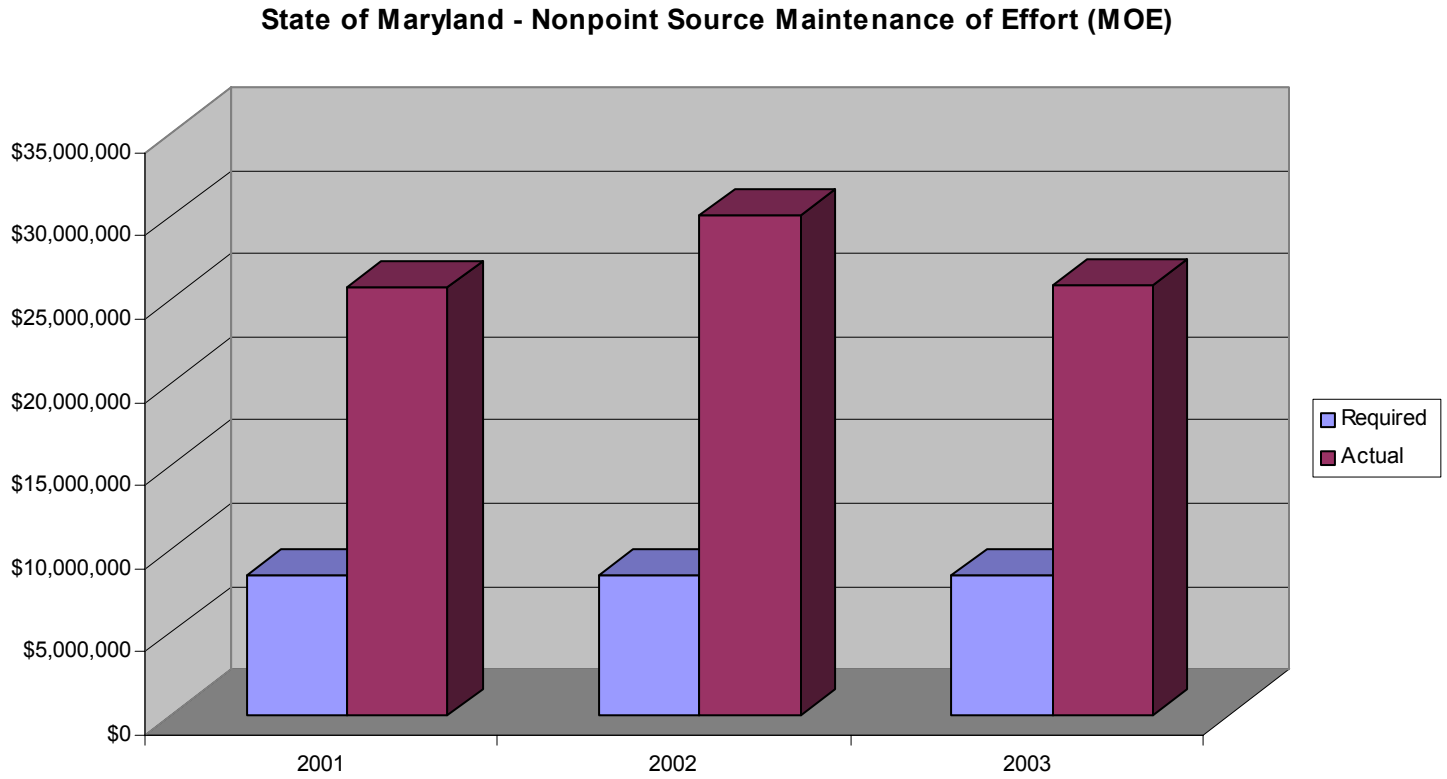
Appendix A: Nonpoint Source Program Financial Information

Nonpoint Source Program Funds

The State of Maryland currently receives over three million dollars from the United States Environmental Protection Agency under CWA § 319 to control and prevent nonpoint source pollution. The state matches these federal funds with a commitment to spend over two million dollars. Below is a breakdown of funds received and spent as of December 2003 during the most recent federal fiscal years. This breakdown includes the expenditures of state and local match funds. It is expected that the State will spend allocated federal and non-federal funds before grant closeout.



Maryland Maintenance of Effort: Section 319(h)(9) of the Clean Water Act requires any State that applies for § 319 grants to establish and maintain its aggregate annual level of State nonpoint source pollution control expenditures for improving water quality at the average level of such expenditures in FFY 1985 and 1986. This is referred to as the State's "Maintenance of Effort" (MOE) requirement. The goal of the MOE requirement is to insure that states allocate a minimum level of resources to control and prevent nonpoint source pollution. In addition this requirement prevents states from substituting federal resources for state resources. Maryland's MOE requirement is $8,447,270. In December 2003, Maryland's Nonpoint Source Program documented state fiscal year (SFY) 2003 nonpoint source expenditures of over $25 million in state funds to control and prevent nonpoint source pollution. Maryland continues to exceed its MOE requirements.



Appendix B

2002 Progress Best Management Practices Implementation in Maryland

2002 Progress, BMP Implementation in Maryland

	Choptank	Lower Eastern Shore	Lower Potomac	Lower Western Shore	Middle Potomac	Patapsco /Back River	Patuxent	Upper Eastern Shore	Upper Potomac	Upper Western Shore	Statewide, Total
Erosion Sediment Control	34	289	167	2,016	10,442	3,957	5,062	92	3,701	2,931	28,689
Dry Detention Ponds & Hydro Structures	41	552	2,052	2,444	1,713	6,873	1,078	1,006	6,300	11,135	33,194
Dry Extended Detention Ponds	96	79	1,138	2,675	2,050	2,258	3,862	238	4,812	1,965	19,172
Filtering Practices	0	0	2	0	145	7	5	0	740	18	918
Infiltration	47	71	178	1,105	157	1,139	1,394	125	854	551	5,622
Roadway Systems	2	37	43	8	0	24	10	33	44	0	202
Wet Ponds and Wetlands	35	2,840	1,792	1,087	915	2,677	1,799	787	1,082	2,571	15,586
Septic Connections	609	900	904	461	0	1,340	296	3,486	2,663	544	11,203
Septic Denitrification	0	0	0	311.999997	0	0	0	0	0	0	311.999997
Animal Waste Management Systems -Livestock	46	24	16	4	11	40	37	128	607	94	1,007
Animal Waste Management Systems -Poultry	143	814	0	0	0	0	0	66	11	0	1,034
Cover Crops	14,931	46,755	0	0	0	0	0	25,640	9,327	1,102	97,755
Conservation Tillage	104,372	128,281	20,803	2,793	28,610	29,119	31,134	131,627	127,720	60,578	665,037

Grass Buffers	1,522	837	24	7	3	35	20	564	390	10	3,412
Retirement Highly Erodible Land	211	2	600	3	13	39	142	1,197	251	135	2,593
Runoff Control	5	2	18	5	1	40	155	32	143	267	668
Soil Conservation Water Quality Plans	136,756	218,829	37,739	8,227	51,207	20,714	86,137	149,434	227,323	106,713	1,043,079
Nutrient Management Plan Implementation	195,020	314,780	61,782	11,610	34,106	37,584	66,736	332,852	270,361	121,678	1,446,509
Stream Protection with Fencing	0	0	2	12	121	22	325	42	709	117	1,350
Stream Protection Without Fencing	0	0	50	596	175	5,800	6,366	225	1,040	12,048	26,300
Forest Conservation	733	1,900	7,194	1,849	7,350	3,619	11,715	4,813	2,511	7,539	49,224
Tree Planting on Mixed Open Land	2	17	183	413	482	374	1,112	19	374	177	3,153
Riparian Forest Buffers on Ag Land	733	5,381	536	45	329	348	498	1,406	3,180	920	13,376
Riparian Forest Buffers on Urban Land	3	0	26	47	54	63	72	33	27	10	337
Tree Planting on Ag Land	903	845	11	42	73	183	151	1,643	1,609	943	6,402
Stream Restoration on Urnan Land	0	1,190	0	5,082	20,998	15,635	2,830	0	6,950	30,783	83,468
Wetlands on Ag Land	886	2,001	139	5	34	102	81	872	186	165	4,471

Note: All units are in acres except for Animal Waste Management Systems and Septic Denitrification (# systems), Stream Restoration (miles), and Septic Connections (# connections).

Appendix C: Matrix of Progress on Nonpoint Source Management Plan Milestones

Category	Priority	Implementation Time–line (Years)		
		1998 – 2002 Goals and Status	**2003 – 2007 Goals & Status**	**2008 – 2012 Goals & Status**
Agriculture	Statewide	→ → → Farmers using commercial fertilizers must have N & P based plans by 2002. Farmers using animal manure or sludge must have N based plans by 2002.	→ → → Soil Conservation Water Quality Plans (SCWQP) on 50% of all farms by 2003 SCWQP implemented on 25% of all farms by 2003 Farmers using animal manure or sludge must have N and P based plans by July 1, 2004 **2003 status:** SCWQ plans developed for 65% of farmland in Maryland and implemented on 55%. Nutrient Management - 75% of farmers covering 85% of Maryland's agricultural land are in compliance. Compliance includes 259,647 acres granted a 'justification of delay,' working to complete plans.	→ → →
	Watershed Focus	Tributary Strategies Agricultural Priority Watersheds **2003 status:** Tributary Strategies are being updated. Maryland announced Tributary Strategy basin nutrient caps in 2003. By April 2004, Tributary Strategies that achieve nutrient reduction with estimated costs will be announced. Detailed implementation plans to be developed by December 2004. For updated Tributary basin summaries (1985-2002) see http://www.dnr.state.md.us/bay/tribstrat/basin_summaries.html	Agricultural Priority Watersheds **2003 status:** Cover crops are the focus for erosion control/ nutrient loading reductions. During 2003 MACS program expanded eligibility of cover crops. 117,000 acres were planted statewide. An additional 12,600 acres planted in three priority watersheds – Antietam, Catoctin Creek, and Monocacy.	Specific Areas To be Determined

Forestry	Statewide	Riparian Forest Buffer (RFB) goal of 43 miles per year	RFB goal of 43 miles per year **2003 Status:** 172 miles of riparian forest buffers were established in 2003. The cumulative total (since 1996) is 1,051 miles.	600 miles of created RFB by 2010
	Watershed Focus	**Coastal Bays:** Maryland's Atlantic Coastal Bays were protected under the Critical Areas buffer regulations. Chapter 433 (HB 301) of 2002 was signed into law on May 16, 2002. Previously, Critical Areas jurisdiction applied only in the Chesapeake Bay and 1000 feet landward of Bay tidal coastline areas. During 2003 the counties developed their plans and received state approval Special Rivers Project (Monocacy, Anacostia, Susquehanna, and Town Creek).	Worked in same priority areas. **2003 Status:** The Special Rivers Project final report for the 10/1/02 – 8/31/03 grant period states that 64.9 miles of buffers installed exceeded the 25-mile grant goal. A watershed-wide analysis of forest cover and planting opportunities was developed for the Anacostia basin. The Town Creek Ecosystem Management Project's focus has been developed and is being implemented.	Specific Areas To be Determined
Urban runoff: developing + developed areas	Statewide	Many aspects of this category will be addressed through NPDES Phase II stormwater permits	Septic systems are an additional focus area. Eight coastal counties are developing septic system inventories and four coastal counties and one tri-county council are developing OSDS management strategies based upon protection of nitrogen-sensitive waters.	

	Watershed Focus		**2003 Status:** Stream restoration and stormwater management projects completed in priority watersheds.	Specific Areas To be Determined
Marinas and recreational boating	Statewide	→ → → 96 certified clean marinas by 2002	→→ → → 125 certified clean marinas by 2004 **2003 Status:** 68 Certified Clean Marinas, 15 Clean Marina Partners, and 89 pledges. 420 sewage pumpout facilities have been installed in 353 marinas.	→ → - 270 certified clean marinas by 2010 - Marine Sewage Pumpout Program goal of 460 facilities by 2010.
	Watershed Focus	**2002 Status:** Chesapeake Bay Coastal Bays Deep Creek Lake	→ → → Focus will be on the Coastal Bays, Chester, Sassafras, and Stillpond/ Fairlee Creek, Middle River/Browns Creek areas	→ →
Channelization and channel modification, dams, and streambank and shoreline erosion	Statewide		→ → → **2003 Status:** A strategic shore erosion assessment, targeting appropriate shoreline response efforts, along with a comprehensive shoreline inventory was completed in two coastal counties. The effort is now expanding into other coastal counties.	→ →
	Watershed Focus	**2002 Status;** Chesapeake Bay Shoreline WRAS watersheds Anacostia, Northwest Branch and the Town Park Stream - Restoration projects are complete.	→ → → **2003 Status:** State is in current negotiation with the Army Corp of Engineers to fulfill objectives of the Chesapeake Bay shoreline erosion study.	→ →
Wetlands	Statewide	→ → → 3,000 acres by 2002	→→ → 10,500 acres by 2007 **2003 Status:** Cumulative total = 13,958 acres of wetland creation, restoration, and enhancement	→ → 15,000 acres by 2010

	Watershed Focus	**2002 Status:** Coastal Bays & Chesapeake Bay commitments are being fulfilled.	**2003 Status:** The Department of the Environment (MDE) conducted an analysis of wetland restoration sites in the Coastal Bays.	Specific Areas To be Determined